

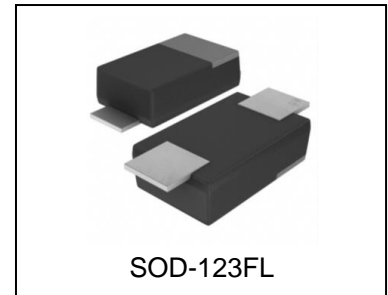


# SM4Fxx(C)A-AT

## Automotive Load Dump Protection TVS

### Features

- 400 watts Peak Pulse Power (10/1000 $\mu$ s)
- Unidirectional and Bidirectional Protection
- Fast Response Time : Typically < 1ns
- Excellent Clamping Capability
- Low profile package
- IEC 61000-4-2 (ESD)  $\pm$ 30kV(air),  $\pm$ 30kV(contact)
- MSL: Level 1
- AEC-Q101 compliant



### Mechanical Characteristics

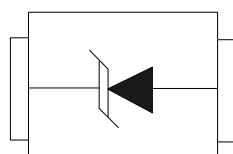
- SOD-123FL package
- Matte tin lead - free plated
- Marking: Marking Code
- RoHS Compliant

### Applications

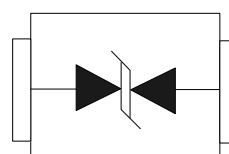
- Auto power system
- Car audio and video
- Automotive instrument
- Car GPS
- Can-bus

Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 10/1000\mu s$ )	$P_{PPM}$	400	Watts
Peak pulse current (10/1000 $\mu$ s)	$I_{PPM}$	See Electrical Characteristics	A
Power Dissipation on infinite heat sink $T_L = 75^\circ C$	$P_D$	2.8	W
Operating Junction Temperature range	$T_J$	-55 to + 150	$^\circ C$
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	220	$^\circ C/W$

### Pin Configuration



Unidirectional



Bidirectional

## Electrical Characteristics

Part Number		Marking		Reverse Stand off Voltage $V_{RWM}$ (Volts)	Breakdown Voltage $V_{BR}(\text{Volts})@I_T$		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_c@I_{PP}$ (Volts)	Maximum Peak Pulse Current $I_{PP}$ (Amps)	Maximum Reverse Leakage $I_R@V_{RWM}$ ( $\mu$ A)
UNI-POLAR	BI-POLAR	UNI-POLAR	BI-POLAR		MIN	MAX				
SM4F10A-AT	SM4F10CA-AT	HX	TX	10	11.1	12.3	1	17	23.5	2.5
SM4F12A-AT	SM4F12CA-AT	IE	UE	12	13.3	14.7	1	19.9	20.1	2.5
SM4F13A-AT	SM4F13CA-AT	IG	UG	13	14.4	15.9	1	21.5	18.8	1
SM4F14A-AT	SM4F14CA-AT	IK	UK	14	15.6	17.2	1	23.2	17.2	1
SM4F15A-AT	SM4F15CA-AT	IM	UM	15	16.7	18.5	1	24.4	16.4	1
SM4F16A-AT	SM4F16CA-AT	IP	UP	16	17.8	19.7	1	26.0	15.4	1
SM4F18A-AT	SM4F18CA-AT	IT	UT	18	20.0	22.1	1	29.2	13.7	1
SM4F20A-AT	SM4F20CA-AT	IV	UV	20	22.2	24.5	1	32.4	12.3	1
SM4F22A-AT	SM4F22CA-AT	IX	UX	22	24.4	26.9	1	35.5	11.3	1
SM4F24A-AT	SM4F24CA-AT	IZ	UZ	24	26.7	29.5	1	38.9	10.3	1
SM4F26A-AT	SM4F26CA-AT	JE	VE	26	28.9	31.9	1	42.1	9.5	1
SM4F28A-AT	SM4F28CA-AT	JG	VG	28	31.1	34.4	1	45.4	8.8	1
SM4F30A-AT	SM4F30CA-AT	JK	VK	30	33.3	36.8	1	48.4	8.3	1
SM4F33A-AT	SM4F33CA-AT	JM	VM	33	36.7	40.6	1	53.3	7.5	1
SM4F36A-AT	SM4F36CA-AT	JP	VP	36	40.0	44.2	1	58.1	6.9	1
SM4F40A-AT	SM4F40CA-AT	JR	VR	40	44.4	49.1	1	64.5	6.2	1
SM4F43A-AT	SM4F43CA-AT	JT	VT	43	47.8	52.8	1	69.4	5.8	1
SM4F45A-AT	SM4F45CA-AT	JV	VV	45	50.0	55.3	1	72.7	5.5	1
SM4F48A-AT	SM4F48CA-AT	JX	VX	48	53.3	58.9	1	77.4	5.2	1

Typical Characteristics

Figure 1: Pulse Derating Curve

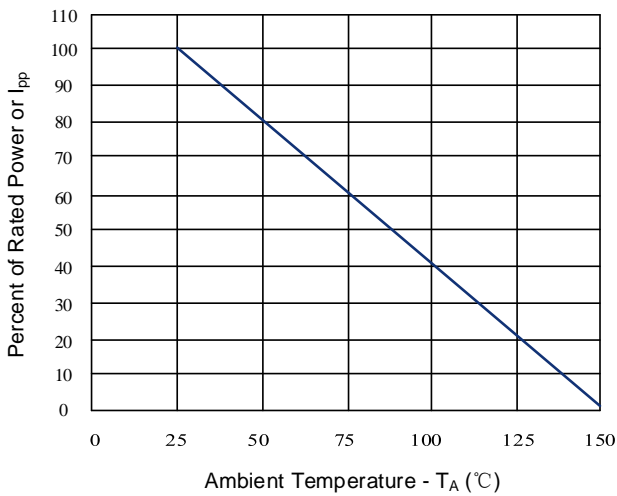
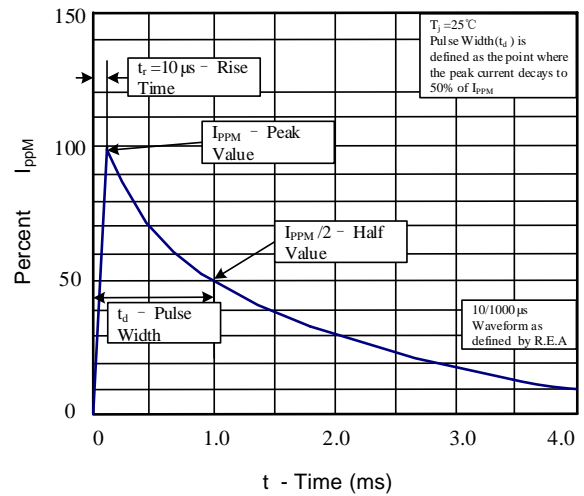


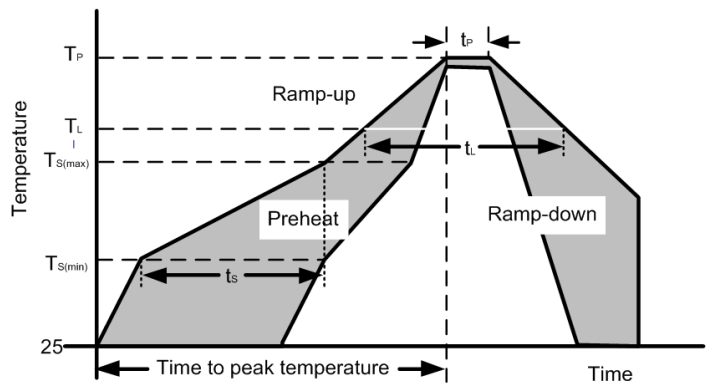
Figure 2: Pulse Waveform



Note: The above typical parameters or typical characteristics are only indicative and do not make specific guarantees. If detailed values are required, additional communication and provision are required.

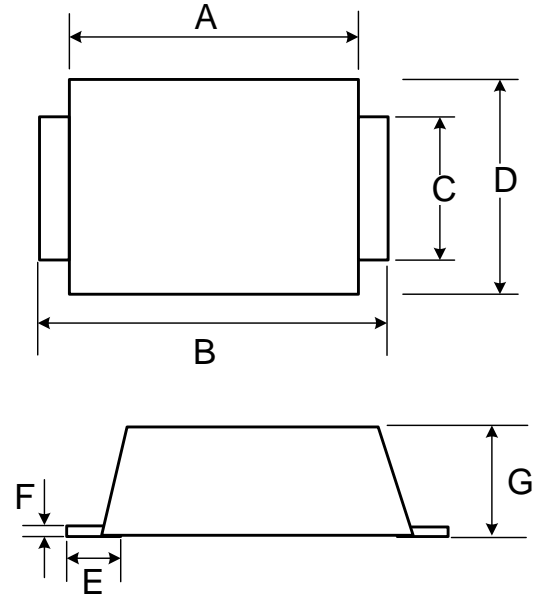
Soldering Parameters

Reflow Condition		
Pre-Heat	Temperature Min ( $T_{s(min)}$ )	150°C
	Temperature Max ( $T_{s(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60-190 s
Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak		3°C/s max
Ts(max) to TL - Ramp-up Rate		3°C/s max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217°C
	Temperature ( $t_L$ )	60-150 s
Peak Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within actual peak Temperature ( $t_p$ )		20-40 s
Ramp-down Rate		5°C/s max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes max
Do not exceed		260°C

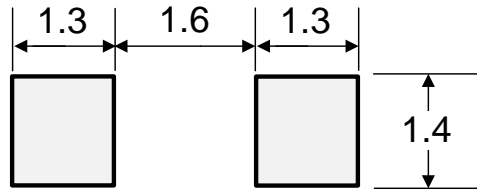


Outline Drawing – SOD-123FL

Ref. (mm)	Millimeters	
	Min.	Max.
A	2.50	3.00
B	3.40	3.95
C	0.70	1.20
D	1.50	2.00
E	0.30	0.95
F	0.05	0.26
G	0.90	1.35

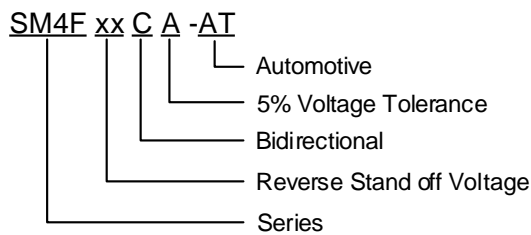


Recommended Solder Pad Layout

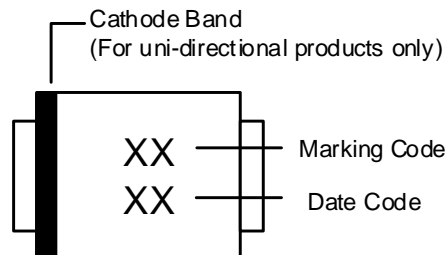


Dimensions in mm

Part Numbering System



Part Marking System

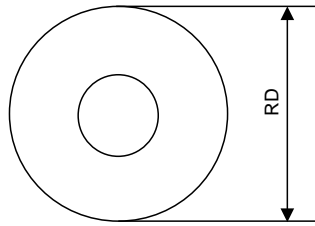


Package Information

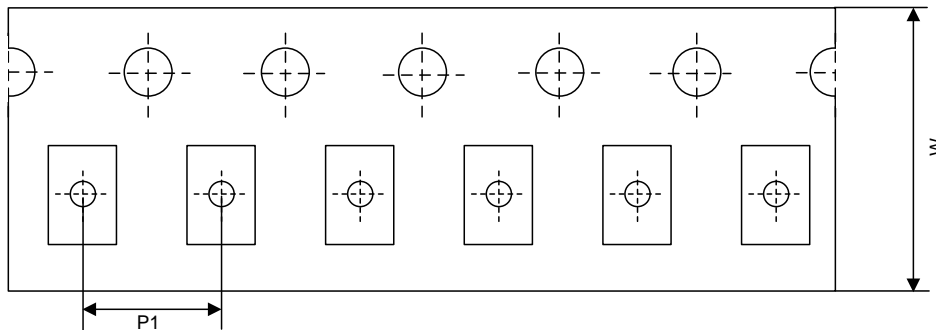
3000 Pcs/Reel

Tape and Reel Information

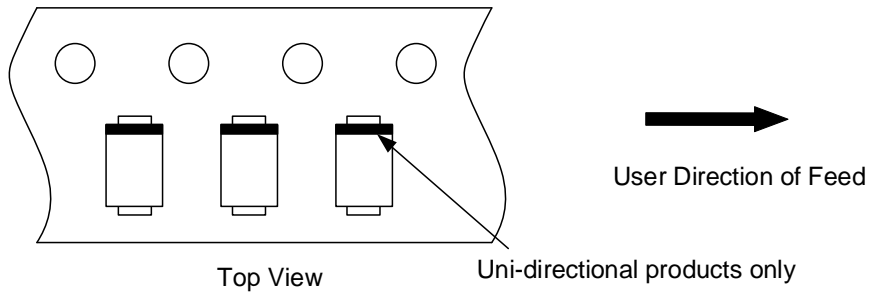
Reel Dimensions



Tape Dimensions



Quadrant Assignments for PIN1 Orientation in tape



RD	Reel Dimensions	7 inch
W	Overall width of the carrier tape	8 mm
P1	Pitch between successive cavity centers	4 mm

Contact Information

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For additional information, please contact your local Sales Representative.

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## Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. WAYON shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and WAYON assumes no responsibility for the application of the product.

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